

IVANOV, R.

"Application of Soviet Experience in Standardization of Mineral Oils",  
P. 168, (COMMUNICATAS, Vol. 5, No. 10/11, Oct./Nov. 1955, Budapest,  
Hungary)

CC: Monthly List of East European Acquisitions (EMAL), LC, Vol. 4, No. 3,  
March 1955, Encl.

IVANOV, R.

What is a decibel and what does measuring the level in decibels mean? p. 37 RADIO. (Ministerstvo na poshtite, telegrafite, telefonite i radioto i Tsentralniia suvet na dobrovolnata organizatsiia za subeistvie na otbranata) Sofiya. Vol. 5, No. 4, 1956

SOURCE: East European Accessions List (EEAL) Library of Congress, Vol. 5, No. 11, November 1956

IVANOV, R. (g.Krasnodar)

A cybernetic "cat." Radio no.1:30-32 Ja '62. (MIRA 15:1)  
(Electronic apparatus and appliances)

BUKHANOVSKIY, I.; IVANOV, R., inzh.

Improvement of ship radar systems [from foreign practices].  
Mor. flot 22 no.2:43-44 F '62. (MIRA 15:4)

1. Nachal'nik otdela avtomatizatsii sudovozhdeniya TSentral'nogo nauchno-issledovatel'skogo instituta ekonomiki i ekspluatatsii vodnogo transporta (for Bukhanovskiy). 2. Otdel avtomatizatsii sudovozhdeniya TSentral'nogo nauchno-issledovatel'skogo instituta ekonomiki i ekspluatatsii vodnogo transporta (for Ivanov).  
(Great Britain--Radar in navigation)

IVANOV, R., inzh.

Use of electronic digital computers in directing the movement  
of ships in river sections equipped with locks. Rech. transp.  
24 no.11:17-18 '65. (MIRA 19:1)

1. TSentral'nyy nauchno-issledovatel'skiy institut ekonomiki i  
ekspluatatsii vodnogo transporta.

1200-1200  
DIMITROV, D.; IVANOV, R.

Diagnostic difficulties in Schoenlein-Henoch disease and its surgery.  
Khirurgia, Sofia 8 no.7:671-672 1955.  
(PURPURA, NONTHROMBOPENIC,  
diag. & surg.)

IVANOV, R.; SIVCHEV, S.

Giant cell tumor of cervical vertebrae. Khirurgia, Sofia 10 no.10:  
938-941 1957.

1. Iz klinikata po ortopediia i travmatologiya i Patologoanatomichnata  
institut pri VMI - Sofia.

(SPINE, neoplasms

giant cell tumor of cervical vertebrae)

(GIANT CELL TUMORS, case reports  
cervical vertebrae)

IVANOV, R.; RAICHEV, R.

Parosteal sarcoma with description of a case with unusual localization.  
Khirurgiia, Sofia no.3:259-262 Mar 58.

1. Institut za spetsializatsiia i usuvurshenstvuvane na lekrite---  
Sofia klinika po ortopediia i travmatologiya. Direktor: prof. B. Boichev  
Nauchnoizsledovatel'ski onkologichen institut Direktor: prof. V. Mikhailov.

(FOOT, neoplasms  
parosteal sarcoma (Bul))  
(FIBROSARCOMA, case reports  
parosteal, of foot (Bul))



KONFORTI, B.; IVANOV, R.

A new surgical procedure for direct subtrochanteric osteotomy of the femur. Khirurgia, Sofia 11 no.7:585-595 1958.

1. Institut za Spetsializatsiia i usuvurshenstvuvane na lekarite-  
Sofia Klinika po ortopediia i travmatologiya. Direktor: Prof. B. Boichev.  
(FEMUR, fract.

surg., new technic for direct subtrochanteric osteotomy  
(Bul))

KONFORTI, B.; IVANOV, R.

Adduction osteotomy of the hip with special reference to the  
technic. Khirurgiia, Sofia 12 no.7:587-596 '59.

1. Institut za spetsializatsiia i usuvurshenstvuvane na leka-  
rite - Sofiia, klinika po ortopediia i travmatologiya. Direktor:  
prof. B. Boichev.  
(HIP surg.)

IVANOV, R.

A new surgical technic in osteosynthesis of fractures of the femoral neck. Khirurgiia, Sofia 13 no.2-3:303-305 '60.

1. Iz Katedrata po ortopediia i travmatologiia - ISUL.  
(FEMUR NECK fract.& disloc.)

BOICHEV, B., prof.; IVANOV, R.

On stable osteosynthesis in fractures of the femoral neck. Khirurgiia,  
Sofia 13 no.11:947-957 '60.

1. Institut za spetsializatsiia i usuvurshenstvuvane na lekarite,  
Sofia Katedra po ortopediia i travmatologiia. Zav. katedrata:  
prof. B.Boichev.  
(FEMUR NECK fract & disloc)

BOYSHEV, B.; IVANOV, R.

Stable osteosynthesis in fractures of the femoral neck. Ortop.  
travm.i protez. 21 no.2:9-13 F '60. (MIRA 13:12)  
(FEMUR—FRACTURE)

IVANOV, R.

On the geology of the Dambaluk volcanic mountain range, Momchilgrad District. Izv Geol inst BAN no.9:143-151 '61.

BOICHEV, B., prof.; IVANOV, R.

Diagnostic difficulties and therapeutic possibilities in giant cell tumors. Khirurgia, Sofia 14 no.1:25-37 '61.

1. Institut za spetsializatsia i usuvurshenstvuvane na lekarite, Sofia. Katedra po ortopediia i travmatologiya. Zav. katedrata: prof. B. Boichev.

(GIANT CELL TUMORS)

IVANOV, R.

Roentgenological indications for intertrochanteric osteotomy of the femur in residual subluxations and epiphysitis of the hip joint in congenital hip dislocation. Khirurgia (Sofia) 14 no.11:1025-1036 '61.

1. Institut za spetsializatsia i usuvurshenstvuvane na lekarite, Sofiia, katedra po ortopediia i travmatologiia. Zav. katedrata: prof. B. Boichev.

(HIP joint & disloc)



IVANOV, R.

Flexion-abduction method in the osteosynthesis of fractures of  
the femoral neck. Ortop., travm.i protez. no.7:18-22 '61. (MIRA 14:8)

1. Iz kliniki ortopedii i travmatologii (dir. - prof. B. Boychev)  
Instituta dlya spetsializatsii i usovershenstvovaniya vrachey,  
Bolgariya.

(FEMUR—FRACTURE)

IVANOV, R., inzh.

Radar station for river craft. Rech. transp. 22 no.11:61-62 N  
'63. (MIRA 16:12)

IVANOV, R.

A petrochemical method and modal systematics of some magmatic rocks. Izv Geol Inst BAN 11:89-124 '62.

IVANOV, R.

Lithologic and stratigraphic correlation of the metamorphic series of Kurdzhali and Asenovgrad regions. Spis Bulg geol druzh 25 no.2:151-158 '64.

1. Geologic Institute of the Bulgarian Academy of Sciences.

L 24642-66

ACC NR: APC012314

(A,N)

SOURCE CODE: UR/0310/65/000/011/0017/0018

AUTHOR: Ivanov, R. (Engineer)

ORG: TsNIIIEVT

TITLE: Use of digital computers for controlling the motion of ships in the lock section of canals

SOURCE: Rechnoy transport, no. 11, 1965, 17-18

TOPIC TAGS: ship navigation, navigation computer, water traffic

ABSTRACT: The author proposes a method for using digital computers to pilot ships through the lock systems of canals. It is assumed that the losses involved in passing each ship through the lock section are a function of the time required for passage of the ships through the section, efficiency in use of the overflow system and utilization factor for the lock chamber. Operational data are used for derivation of a general quadratic equation which expresses the traffic intensity in terms of the month. The empirical constants for this formula are given for the years of 1961-64. The traffic data for these years are analyzed on a punched card computer and used as a basis for developing methods to speed up traffic. Orig. art. has: 1 figure, 2 tables, 2 formulas.

SUB CODE: 17/

SUBM DATE: 00/

ORIG REF: 000/

OTH REF: 000

UDC: 656.628 : 681.142.002

Cord 1/1 *pla*

IVANOV, R., aspirant; YENSHINA, G.

Regulation of the movement of vessels on the lock-equipped waterways  
of France. Rech. transp. 24 no.8:52-53 '65. (MIRA 18:9)

1. TSentral'nyy nauchno-issledovatel'skiy institut ekonomiki i  
eksploatatsii vodnogo transporta.

IVANOV, R.

Transformation of the Zavaritskiy number into the standard  
catanorm. Izv Gool inst BAN 10;73-87 '62.

SMYKOV, V.I., inzh.; IVANOV, R.A., inzh.

Stabilizing gravelly soils with cement. Avt. dor. 24 no.3:23 Mr  
'61. (MIRA 14:5)  
(Soil stabilization)



LIKHTEROV, B.M., kand.tekhn.nauk; IVANOV, R.A., inzh.; SHEVELEV, L.M., inzh.

Effect of sea water temperature on the efficiency of a marine  
steam turbine plant with a system of free-flow circulation.  
Sudostroenie 29 no.6:15-18 Je '63. (MIRA 16:7)  
(Steam turbines, Marine) (Ocean temperature)



7(4),7(5),24(7)  
AUTHORS:

Dzhelepov, B. S., Ivanov, R. B.,  
Nedovesov, V. G., Shishin, B. P.

SOV/48-23-7-2/31

TITLE:

The  $\alpha$ -Spectrum of  $U^{233}$  ( $\alpha$ -spektr  $U^{233}$ )

PERIODICAL:

Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1959,  
Vol 23, Nr 7, pp 788-791 (USSR)

ABSTRACT:

The introduction mentions a paper by F. Asaro who detected three  $\alpha$ -groups of  $U^{233}$  by means of a magnetic  $\alpha$ -spectrometer of the sector type. In the following L. L. Gol'din et al. showed in an exact investigation of the  $\alpha$ -spectrum of  $U^{233}$  that it is composed of five lines. These lines are indicated, and it is ascertained that the last three of these lines cannot be calculated by the known formulas for the intensity of the  $\alpha$ -transitions. In 1958, the authors carried out investigations of the  $\alpha$ -spectrum of  $U^{233}$  by means of the  $\alpha$ -spectrometer described in the first paper of this issue; these investigations permitted a more accurate determination of the intensity of these three weak lines. Electrochemically plated  $U^{233}$  on platinum was used as a source. The measured

Card 1/2

The  $\alpha$ -Spectrum of  $U^{233}$

SOV/48-23-7-2/31

values are compiled in two diagrams (Figs 1 and 2); tables 1 and 2 compare the values with those obtained by other authors. The results show that if there is an  $\alpha_4$ -line this is very weak. The  $\alpha_5$ -line is formed by a transition to the 316 kev level, and its intensity shows that this is a transition of a single-particle excited level. The quantum numbers of these transitions are dealt with in detail, and finally a scheme of the decay of  $U^{233}$  and of the levels  $Th^{229}$  is given (Fig 3). The authors thank Yu. T. Puzynovich and V. N. Delayev for their help in the measurements, and L. K. Peker for the discussion of the results of their work. There are 3 figures, 2 tables, and 9 references, 6 of which are Soviet.

ASSOCIATION: Radiyevyy institut im. V. G. Khlopina Akademii nauk SSSR  
(Radium Institute imeni V. G. Khlopin of the Academy of Sciences, USSR)

Card 2/2

DZHELEPOV, B.S.; IVANOV, R.B.; NEDOVESOV, V.G.

$\alpha$ -Decay of Pu<sup>239</sup>. Zhur. eksp. i teor. fiz. 41 no.6:1725-1728 D  
'61. (MIRA 15:1)

1. Radiyevyy institut AN SSSR.  
(Plutonium--Decay)

110092  
S/048/62/026/008/002/028  
B102/B108

26.2541  
AUTHORS: Ivanov, R. B., Krivokhatskiy, A. S., and Nedovesov, V. G.

TITLE: Measurement of the alpha particle energies of some curium isotopes

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 26, no. 8, 1962, 976-978

TEXT: The alpha transition energies of Cm<sup>242,243,244</sup> were determined by means of photographic emulsion plates. In four series of measurements the plates were exposed to the Cm alpha particles as well as to a Bi<sup>212</sup> source, whose alpha decay energies are known exactly. The magnetic field strength was kept constant with an accuracy of 0.01%. The following mean alpha-transition energies (kev) were obtained:

Cm<sup>242</sup>:  $E_{\alpha_0} = 6115 \pm 1$      $E_{\alpha_1} = 6071 \pm 1$

Cm<sup>244</sup>:  $E_{\alpha_0} = 5806 \pm 2$      $E_{\alpha_1} = 5763 \pm 2$

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9/048/62/026/008/002/028  
B102/B108

Measurement of the alpha ....

$^{243}\text{Cm}$ : three groups with  $E_\alpha = 5991 \pm 3, 5784 \pm 3, 5739 \pm 3$ . These values are somewhat higher than those obtained by other authors (Strominger et al. Tables of Isotopes UCRL-1928. April 1958). There are 2 figures and 3 tables.

Card 2/2

S/056/62/043/006/019/067  
B102/B104

AUTHORS: Dzhelepov, B. S., Ivanov, R. B., Moskvina, L. N.

TITLE: Alpha decay of  $\text{Ac}^{225}$

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 43,  
no. 6(12), 1962, 2077 - 2079

TEXT: An actinium preparation was obtained by irradiating metallic thorium by 660-Mev protons from the OIYaI synchrocyclotron and subsequent chemical separation. The actinium was then evaporated in vacuo and deposited on a glass base. Its  $\alpha$ -spectrum was measured with a magnetic  $\alpha$ -spectrometer with double focusing. The results are in good agreement with those obtained by Perlman-Rasmussen (Alpha radioactivity) and Hagemann (Phys. Rev. 79, 534, 1950). The lines at 388 and 544 kev, detected for the first time, are attributed to the  $\text{Fr}^{221}$  nucleus. There are 2 figures and 1 table.

level energy intensity, %

kev	
$\alpha_0$ ---0	54
$\alpha_1$ 37	30.7
$\alpha_2$ 98	8.1
$\alpha_3$ 107	2.1
$\alpha_4$ 148	0.95
$\alpha_5$ 194	2.9
$\alpha_6$ 222	0.5
$\alpha_7$ 252	0.6
$\alpha_8$ 274	0.08
$\alpha_9$ 311?	0.02
$\alpha_{10}$ 388	0.06
$\alpha_{11}$ 544	0.05

SUBMITTED: July 20, 1962

Card 1/1



BELOV, L.M.; DZHELEPOV, B.S.; IVANOV, R.B.; KRIVOKHATSKIY, A.S.;  
NEDOVESOV, V.G.; CHECHEV, V.P. .

α -Decay of  $\text{Cm}^{245}$  and  $\text{Cm}^{246}$ . Radiokhimiia 5 no.3:394-  
395 '63. (MIRA 16:10)

(Curium isotopes—Decay)

IVANOV, R.B.; KRIVOKHATSKIY, A.S.; KRIZHANSKIY, L.M.; NEDOVESOV, V.G.;  
YAKUNIN, M.I.

Determining ( $T_{\alpha}$ )  $Pu^{241}$  half-life period. Attn. energ. 15 no.4:  
322-323 0 '63. (MIRA 16:10)

DZHELEPOV, B.S.; IVANOV, R.B.; NEDOVESOV, V.G.; CHECHEV, V.P.

$\alpha$ -Decay of curium isotopes. Zhur. eksp. i teor. fiz. 45  
no.5:1360-1371 N '63. (MIRA 17:1)

BARANOV, I. A.; IVANOV, R. B.; KRIVOKHATSKII, A. S.; NEDOVESOV, V. G.; SILANT'YEV, A. N.

"Gamma Radiations of  $\text{Cm}^{242}$  and  $\text{Cm}^{243}$ ."

report submitted for All-Union Conf on Nuclear Spectroscopy, Tbilisi, 14-22  
Feb 64.

Radiyevyy Institut (Radium Inst)

ACCESSION NR: AP4037560

S/0056/64/046/005/1517/1524

AUTHORS: Dzhelepov, B. S.; Ivanov, R. B.; Nedovesov, V. G.

TITLE: Alpha decay of Pu-241

SOURCE: Zh. eksper. i teor. fiz., v. 46, no. 5, 1964, 1517-1524

TOPIC TAGS: plutonium, Alpha decay, Alpha particle spectroscopy, level transition, decay scheme,

ABSTRACT: The  $\alpha$  spectrum of Pu<sup>241</sup> was investigated with a magnetic  $\alpha$  spectrometer with beam focusing at an angle  $\pi/2$ . The measurement procedure was similar to that used for curium earlier (ZhETF v. 45, 1360, 1963). The data obtained on the relative intensities of the  $\alpha$  transitions in each plutonium isotope (table 1), together with resolution of some of the lines, yield 3 level schemes for the  $\alpha$  decay of Pu<sup>241</sup> and Cm<sup>243</sup>. Several arguments are advanced against one of the

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ACCESSION NR: AP4037560

levels (level a) and in favor of the other (level b). Orig. art.  
has: 3 figures and 2 tables.

ASSOCIATION: None

SUBMITTED: 22Jun63

DATE ACQ: 09Jun64

ENCL: 02

SUB CODE: NP

NR REF SOV: 003

OTHER: 010

Card 2/4

ACCESSION NR: AP4037560

ENCLOSURE: 01

Tabulated experimental results

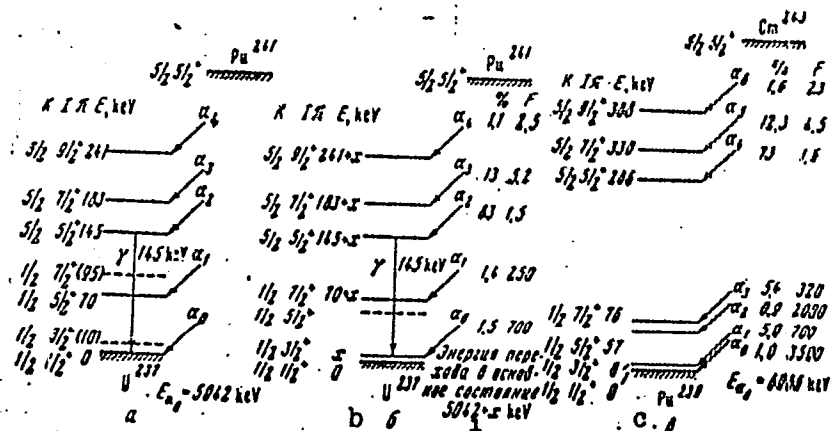
1 № линии	2 Изотоп плутония, которому припи- сан $\alpha$ -переход	3 Табличные значения [1]		5 Наша данные	
		$E_{\alpha}$ , keV	4 относительная интенсивность в данном изото- пе, %	$E_{\alpha}$ , keV	относительная интенсивность в данном изото- пе, %
1	Pu <sup>241</sup>	.	.	5042 $\pm$ 4	1,5 $\pm$ 0,5
2	Pu <sup>240</sup>	5020	0,1	5020	0,1
3	Pu <sup>241</sup>	.	.	4973 $\pm$ 4	1,4 $\pm$ 0,3
4	Pu <sup>242</sup>	4808	76	4904 $\pm$ 3	75 $\pm$ 2
5	Pu <sup>241</sup>	4893	75	4890 $\pm$ 4	83 $\pm$ 8
6	Pu <sup>241</sup>	4848	25	4862 $\pm$ 4	13 $\pm$ 3
7	Pu <sup>242</sup>	4853	24	4850 $\pm$ 3	25 $\pm$ 2
8	Pu <sup>241</sup>	.	.	4805 $\pm$ 4	1,1 $\pm$ 0,3

1 - line number, 2 - isotope to which the alpha transition is assigned, 3 - tabulated values, 4 - relative intensity in the given isotope, per cent, 5 - our data

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ACCESSION NR: AP4037560

ENCLOSURE: 02



1 - Energy of transition to ground state  $5042 + x$  keV

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Case 1:17-cv-00020

0925 1685



24,2200

25791

S/046/61/025/005/005/024

R104/P201

AUTHORS: Spivak, G. V., Sirotenko, I. G., and Ivanov, R. D.

TITLE: Domain structure of ferromagnetic films produced by cathode sputtering

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya.  
v. 25, no. 11, 1961, 551-553

TEXT: The present investigation was the subject of a lecture delivered at a symposium on thin ferromagnetic films (Krasnoyarsk, July 4 to 7, 1960). Cathode sputtering was performed in a plasma under an intense discharge and at a low pressure ( $2 \cdot 10^{-2} - 10^{-3}$  mm Hg). The free-path length of sputtered atoms was somewhat longer than the distance between target and base layer. The specimen intended for sputtering was connected as the third electrode with a negative potential of 1 kv. A hot cathode served for augmenting discharge current and ion density. The discharge current was of the order of 1 ampere, while that directed onto the specimen to be sputtered was of the order of 1 milliampere. The base layers were made of glass and arranged at a distance of 2 - 3 cm from the

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S/048/61/025/005/005/024

B104/E201

Domain structure of ferromagnetic ...

target. The specimens to be sputtered were disk-shaped and had an area of about  $1 \text{ cm}^2$ . The film thickness of permalloy specimens (79% Ni, 17% Fe, 4% Mo) changed linearly with the sputtering time (50-35 minutes), when the specimen potential was 800 v, the discharge current was 0.75 a, the current density to the specimen was  $1.6 \text{ ma}\cdot\text{cm}^{-2}$ , and the pressure was  $9\cdot 10^{-3} \text{ mm Hg}$ . At the same time, the temperature of the specimens ranged from 100 to  $125^\circ\text{C}$ . The films formed in a 175-200 oersted magnetic field which was oriented in parallel to the film plane. No annealing processes took place in a magnetic field. Spectroscopic analyses showed that there was no difference between the composition of sputtered films and that of the initial material. The authors were able to observe magnetic powder patterns on 800 Å thick cobalt films. The direction of easiest magnetizing coincided with the magnetic field direction during the process of film sputtering. The sputtering of iron silicide took place under the following conditions, the specimen potential relative to the cathode was 700 v, the current density was  $6 \text{ ma}\cdot\text{cm}^{-2}$ , the discharge current was 1 a, the pressure was  $8\cdot 10^{-3} \text{ mm Hg}$ . The sputtering times were 10, 20, and 30 minutes. The wedge-shaped powder patterns observed on iron silicide

Card 2, 4

Domain structure of ferromagnetic ...

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S/C48/61/024/005/005/024  
B104/R201

films with 3% Si were oriented in the field direction. In films of the abovementioned permalloy composition, produced under "linear" conditions, the sputtering rate had to be increased sharply (discharge current 1 a, potential of specimen 1.2 kv, current density to specimen 2.6 ma/cm<sup>2</sup>, pressure  $8 \cdot 10^{-5}$  mm Hg) to obtain distinct powder patterns. Differently thick films of this type showed the domains to divide into equal intervals from the thickness of 500 Å onwards. In addition, the domain structure is somewhat increased with larger thicknesses, and the wedges extend in the field direction. On a further increase the wedges are transformed into planes with parallel sides which are oriented in the field direction. The configuration of the domains becomes disordered at 3000 Å. Experimental results are summarized as follows: (1) films can be easily prepared from any material by cathode sputtering; (2) films of defined thicknesses can be obtained under well controlled production conditions; (3) a good uniformity of sputtering and a sufficient rapidity of film preparation are ensured; (4) films thus produced do not differ essentially from the initial material as to their composition. There are 2 figures and 7 non-Soviet-bloc references.

Card 3/4

Domain structure of ferromagnetic...

25791

S/048/61/025/005/005/024

E104/E201

ASSOCIATION: Fizicheskiy fakul'tet Moskovskogo gos. universiteta im.  
M. V. Lomonosova (Division of Physics, Moscow State  
University imeni M. V. Lomonosov)

Card 4/4

S/048/61/025/012/007/022  
B116/B138

AUTHORS: Spivak, G. V., Kirenskiy, L. V., Ivanov, R. D., and Sedov,  
N. N.

TITLE: Development of mirror-type electron microscopy of magnetic  
microfields

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 25,  
no. 12, 1961, 1465 - 1469

TEXT: The authors present electron-optical photomicrographs of domain  
structures of various ferromagnetic materials and compare them with powder  
patterns. The distribution of the local magnetic fields scattered by the  
specimen is obtained from the contrast. G. V. Spivak, I. N. Prilezhayeva,  
and V. K. Azovtsev (Dokl. AN SSSR, 105, 965 (1955)) were the first to re-  
commend the electron mirror for photographing magnetic microfields. They  
carried out their experiments at the laboratoriya elektronnoy optiki MGU  
(Electron Optics Laboratory of MGU). The electron mirror has the following  
advantages over the methods of secondary electron emission or photoeffect:  
high field sensitivity (the illuminating electron beam is stopped by an

Card 1/A

S/048/61/025/012/007/022  
B116/B138

Development of mirror-type...

electric field in front of the specimen, i. e. "probing" of the spatial field structure; high contrast, due to the forwards and backwards motion of the electron; and the possibility of examining the magnetic structure at different distances from the source of the microfield. The optical system can be traversed by both slow and fast electrons. A 50-kv voltage focuses the reflected electrons and enhances the resolving power of the instrument. Domain structure electron-mirror pictures of a  $\text{PbO}(\text{Fe}_2\text{O}_3)_6$  crystal magnification: 400, 800, and 1500), cobalt (400 and 800), and a cobalt film ( $\sim 1000 \text{ \AA}$ , 400 times), were in good agreement with ones produced by the powder method (400). The local magnetic fields were determined from the contrast. Calculations have shown that the contrast depends on the product  $H_z$  ( $z$  = extent of the H-field). The magnetic field decreases almost exponentially. Results are shown in Fig. 6. Finally it is noted that magnetic fields can be examined under an electron mirror microscope and that their strength can be measured at different distances from the specimen. The magnification here achieved (about 2000) can be further increased. There are 6 figures and 7 Soviet references.

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31608  
S/048/61/025/012/022/022  
B125/B112

9,2300(1160, 1164, 1385)

AUTHORS: Ivanov, R. D., Spivak, G. V., and Kislova, G. K.

TITLE: The properties of ferromagnetic films produced by cathode sputtering

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 25, no. 12, 1961, 1524-1525

TEXT: A method worked out by G. V. Spivak, I. G. Sirotenko, and R. D. Ivanov (Izv. AN SSSR. Ser. fiz., 25, 581 (1961) for the production of one-component and multicomponent ferromagnetic films of high quality by cathode sputtering was improved. The magnetization curves and the hysteresis loops of such films were studied and the most important loop parameters were determined by a magneto-optic method, suggested by G. S. Krinichik (Fizika tverdogo tela, 2, no. 8 (1960)) which uses the equatorial Kerr effect. Polarized light incident on the surface of the film through two windows in the discharge tube, was transmitted to a photoelectric cell by reflexion. In case of static operation, the hysteresis loop was recorded by means of a bridge circuit with two selenium photoelectric

Card 1/2

Card 2/2 University imeni M. V. Lomonosov)

SPIVAK, G.V.; KIRENSKIY, L.V.; IVANOV, R.D.; SEDOV, N.N.

Development of specular electron microscopy of magnetic  
materials. Izv. AN SSSR. Ser. fiz. 25 no.12:1465-1469  
D '61. (MIRA 14:12)

1. Fizicheskiy fakul'tet Moskovskogo gosudarstvennogo univer-  
siteta im. M.V. Lomonosova i Institut fiziki Sibirskogo otdeleniya  
AN SSSR.

(Electron microscopy)  
(Magnetic materials)



23734  
S/057/61/03/006/018/019  
B116/B201

9.4300 (1072, 1164, 1385) also 1145, 1160, 1147  
AUTH: Spivak, G. V., Sirchtenko, I. G., and Ivanov, R. D.

TITLE: Micromagnetic structure of films obtained by cathode sputtering

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 31, no. 6, 1961, 754 - 756

TEXT: A description is given of the application of intense cathode sputtering for the purpose of obtaining different ferromagnetic films. Compared with existing methods, this one is shown to display a number of advantages. The domain structure and its changes have been observed on ferromagnetic cobalt films, molybdenum-permalloy films (79Ni 17Fe 4Mo), and silicon-iron films (3.3% Si) with the aid of powder patterns. The characteristics of the change of the domain structure with a change of thickness have been established on molybdenum-permalloy films. Ferromagnetic films are usually obtained by vacuum evaporation or by electrodeposition. Such methods, however, display a number of essential drawbacks: 1) The chemical composition of the film differs from that of the initial material; 2) difficulties arise in the preparation of homogeneous films of a desired

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B116/B201

Micromagnetic structure of films...

thickness. An attempt has been made by G. Siddall (Ref. 1: Proc. Inst. Electronics. 34, 1958) and G. Webber (Ref. 2: Adv. in Electronics a. Electron Phys. 7, 239, 1955) to obtain films of different metals by cathode sputtering. A paper by L. Reimer (Ref. 3: Zs. f. Phys. 149, 425, 1957) describes attempts to prepare nickel films by cathode sputtering. These experiments, however, were conducted with relatively weak discharge currents and in a glow discharge; in addition, relatively high gas pressures (of 0.1 mm Hg and more) were applied. In such a case, a long time is needed to obtain films of a desired thickness, which, however, causes the film to be polluted and oxidized. The authors of the present paper have carried out an intense cathode sputtering in the plasma of a low-pressure discharge ( $2 \cdot 10^{-2}$  to  $10^{-3}$  mm Hg). The mean free path was in this case larger than the distance between the bombarded target and the base on which the film was formed. The sputtered specimens were introduced into the plasma as the third electrode with a negative potential of the order of 1 kv with respect to the cathode. A hot cathode was used to raise the density of the discharge current. The discharge current was of the order of some amperes, and the current applied to the sputtered specimen was of the order of some

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## Micromagnetic structure of films...

milliamperes. The glass bases onto which the films were sputtered, were placed at a distance of 2 - 3 cm from the target. The setup used was so constructed as to allow several films to be submitted to sputtering simultaneously, without having to interrupt the sputtering process. The disk-shaped sputtered specimens had an area of 1 cm<sup>2</sup>, which ensured a sufficient deposition of the sputtered material onto the base. The film thickness varied linearly with time. Therefore, the thickness could be easily regulated by changing the sputtering time; thus, films of any desired thickness were obtained. The film thickness was measured with an *MM-5* (MII - 5) microinterferometer. The glass bases were heated up to 100 - 125°C. The films formed in a magnetic film of the order of 175 - 200 oersteds, which was parallel to the plane of the base. Quantitative chemical and spectroscopic analyses of films obtained by cathode sputtering and with different modes of operation showed that their composition did not differ from the initial components in the sputtered materials. The domain structure was observed on the films with the aid of powder patterns. When submitting molybdenum-permalloy films to sputtering, the specimen potential amounted to 800 v, the discharge current was 0.75 a, the density of the current to the specimen was 1.6 ma/cm, and the pressure was 9.10 mm Hg. The domain walls

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B116/B201

Micromagnetic structure of films...

changed in appearance with an increase of the film thickness. The silicon-iron films, on which wedge-shaped powder patterns were established, were submitted to sputtering at a specimen potential of 700 v. a current density of  $6 \text{ ma/cm}^2$ , a discharge current of 1 a, and a pressure of  $8 \cdot 10^{-3}$  mm Hg. The method described here for obtaining ferromagnetic films by intense cathode sputtering is characterized by the following circumstances: 1) It is possible to obtain high-quality films of different thicknesses under easily controllable conditions; 2) cathode sputtering may be applied with materials of any melting temperatures; 3) uniform sputtering and pure films are ensured; 4) most important, the films obtained display only small deviations from the composition of the sputtered ferromagnetic substances. [Abstracter's note: Essentially complete translation.] There are 2 figures and 3 non-Soviet-bloc references.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova  
Fizicheskii fakul'tet (Moscow State University imeni M. V. Lomonosov, Division of Physics)

SUBMITTED: September 16, 1960  
Card 4/4

S/048/62/026/011/003/021  
B125/B102

24,7700

AUTHORS: Sedov, N. N., Spivak, G. V., and Ivanov, R. D.

TITLE: Electron-optical study of a p-n junction in germanium and silicon

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 26, no. 11, 1962, 1332-1338

TEXT: The authors describe an electron-microscopic method of examining a p-n junction with the help of ion-induced electron emission. This method offers the following advantages: (1) The surface of the specimen and the junction can be examined simultaneously; (2) the overall length of the junction is visible; (3) the image is not darkened by any auxiliary grid; (4) the method is likely to be suitable also for greater enlargements; (5) quantitative measurement of the potential distribution in the p-n junction is very simple. The secondary electrons are knocked out of the specimen by positive ions of 3-4 kev and then are accelerated and focused with the immersion objective of a high-quality emission microscope with improved metal mirror. Such secondary emission microscopes are

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Electron-optical study of a ...

S/048/62/026/011/003/021  
B125/B102

particularly suitable for examining semiconductors with surface junctions that are not heated. The photographs are taken inside the vacuum chamber. The disturbances of the accelerating field that arise over the p-n junction bend the electron trajectories. The electrons deflected by these disturbances are kept away from the screen of the microscope by an aperture stop. When a voltage of 5-10 v is applied in the back direction, the image of the p-n junction assumes the shape of a dark band which need not be straight and which broadens as voltage increases. The range of the potential in the p-n junction can be determined from a comparison between the secondary emission image and the electron mirror. The construction of a mirror electron microscope was described by G. V. Spivak et al. (Izv. AN SSSR, Ser. fiz., 25, 683 (1961)). The shape of the potential barrier on the p-n junction was determined by using the sharp contrast between the reflected image of the surface and the boundary of the "spot" of secondary emission. The method described here permits measurements at sufficiently small intervals. Its accuracy is dependent upon the properties of the electron mirror which is more sensitive to inhomogeneities, such as p-n junctions, than is an electron microscope with ion-induced electron emission because the impurities change the work

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Electron-optical study of a ...

S/048/62/026/011/003/021  
B125/B102

function. There are 10 figures.

ASSOCIATION: Fizicheskiy fakul'tet Moskovskogo gos. universiteta im.  
M. V. Lomonosova (Physics Division of the Moscow State  
University imeni M. V. Lomonosov)

Card 3/3

SPIVAK, G.V.; IVANOV, R.D.; PAVLYUCHENKO, O.P.; SEDOV, N.N.

Formation of contrast in mirror-type, emission, and scanning  
electron-optical systems. Izv. AN SSSR. Ser. fiz. 27 no.9:  
1139-1146 S '63. (MIRA 16:9)

1. Fizicheskiy fakul'tet Moskovskogo gosudarstvennogo universiteta  
im. Lomonosova.

(Electron microscope)



L 19956-63

EWI(1)/ENG(k)/EWP(q)/EWT(m)/EEC(o) 2/EWP(B)/EDS

ATFIC/ASD/ESD-5/IJP(C)-P-4-AT/JD

ACCESSION NR: AP3007825

S/0048/63/027/009/1203/1206

AUTHOR: Spivak, G.V.; Ivanov, R.D.

TITLE: A mirror electron microscope and its use for quantitative investigation of semiconductors / Report, Fourth All-Union Conference on Electron Microscopy held in Sverdlovsk 12-14 March 1963/

SOURCE: AN SSSR, Izv.Ser.fizicheskaya, v.27, no.9, 1963, 1203-1206

TOPIC TAGS: p-n junction , semiconductor , electron microscopy

ABSTRACT: The paper is a general report on investigations of the width of p-n junctions and the potential distribution across them by means of a mirror electron microscope. These investigations are part of comprehensive studies of p-n junctions on semiconductors by different techniques. The mirror microscope has been described elsewhere (G.V.Spivak and others, Izv.AN SSSR,Ser.fiz.,25, 683, 1961). For the present work there was built a special specimen holder with provision for applying a blocking voltage to the p-n junction, heating the specimen, and measuring the temperature by means of a thermocouple (see Enclosure) for the purpose one of the purposes was to investigate the effect of temperature. The

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ACCESSION NR: AP3007825

junction in mirror microscopes is visualized by displacement of the boundary of secondary emission across the junction incident to variation of the potential applied to the semiconductor specimen. Actually the electric field emerging to the surface of the junction usually combines with the field due to a poorly conducting film that forms on the surface, so that the observed pattern is a superposition of the two fields, which are characterized by different dependences on the temperature of the specimen (hence the interest in heating the specimen). Six micrographs of germanium surfaces are reproduced, as well as a family of curves characterizing the variation of the junction width with applied voltage at 30, 60 and 120°C. Some of the microphotographs illustrate the results of heating. Orig.art.has: 6 figures

ASSOCIATION: Fizicheskiy fakultet Moskovskogo gos.universiteta im.M.V.Lomonosova  
(Physics Department, Moscow State University)

SUBMITTED: OO

DATE ACQ: 07Oct63

ENCL: 01

SUB CODE: PH, SD

NO REF SOV: 006

OTHER: 000

Card 2/3

SPIVAK, G.V.; IVANOV, R.D.; PAVLYUCHENKO, O.P.; SEDOV, N.N.; SHVETS, V.F.

Visualization of a magnetic sound-recording field by means of  
an electron mirror. Izv. AN SSSR. Ser. fiz. 27 no.9:1210-1218  
S '63. (MIRA 16:9)

1. Fizicheskiy fakul'tet Moskovskogo gosudarstvennogo universiteta  
im. M.V.Lomonosova.

(Electron optics) (Magnetic fields)

SPIVAK, G. V.; FAVLYUCHENKO, O. F.; IVANOV, R. D.; NETISHENSKAYA, J. F.

"Die Struktur des Magnetfeldes innerhalb der Domanenwand, mit Hilfe des  
Spiegelelektronenmikroskopes sichtbar gemacht."

report submitted to 3rd European Regional Conf, Electron Microscopy, Prague,  
26 Aug-3 Sep 64.

ACCESSION NR: AP4028456

S/0181/64/006/004/1223/1227

AUTHORS: Drokin, A. I.; Laptey, D. A.; Ivanov, R. D.

TITLE: Domain structure dynamics of thin ferrite films as a function of magnetic field and temperature

SOURCE: Fizika tverdogo tela, v. 6, no. 4, 1964, 1223-1227

TOPIC TAGS: ferrite film, ferrite domain structure, magnetic field dependence, temperature dependence, Kerr magnetooptical effect, cobalt ferrite, nickel ferrite, nickel zinc ferrite

ABSTRACT: The domain structure dynamics of thin ferrite films as a function of magnetic field and temperature was investigated, using the Kerr magnetooptical effect. The films were prepared by cathode sputtering of the ferrite onto a polished quartz backing which could be heated to 1000°C. The films obtained were of the order of 1000 Å thick. The behavior of cobalt ferrite film was similar to that of nickel-zinc ferrite, both having uniaxial anisotropy. After demagnetization with a variable field decreasing smoothly to zero, domain structure was

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ACCESSION NR: AP4028456

established in the samples, indicated by the observation of light and dark bands. With increasing magnetization the light domains decreased in size until the structure completely disappeared at 33 oerst for cobalt ferrite and 110 oerst for nickel-zinc ferrite. Domain structure did not reappear with a decrease of the magnetic field to zero. Light centers of reverse magnetization began to appear at -11.6 oerst and -63 oerst respectively. With increasing reverse magnetic field the light domains grew until the domain structure disappeared at -33 oerst and -110 oerst respectively. The behavior of nickel ferrite was considerably different. Regardless of the direction of the demagnetizing field, domains were always established perpendicular to that direction. With increasing magnetic field the contrast between light and dark domains decreased, but the domain size remained fixed. This is attributed to the fact that nickel ferrite is isotropic. Hence, reverse magnetization does not occur by the shift of domain boundaries but by the rotation of the magnetization vector. Centers of reverse magnetization appeared at -60 oerst, and the domain structure completely disappeared at -100 oerst. The temperature effect on cobalt ferrite was also studied. The field at which centers of reverse magnetization appeared decreased from  $-11\frac{1}{2}$  oerst at 0°C to -7 oerst at 200°C and then increased to  $-12\frac{1}{2}$  oerst at 400°C. The field at which the domain structure disappeared decreased very gradually from -33 oerst at 0°C to -31 oerst

Card 2/3

AUTHOR: Ivanov, F.D.

TITLE: On the possibility of measuring domain wall thicknesses in ferromagnetic materials with a reflection electron microscope

SOURCE: Zhurnal tekhnicheskoy fiziki, v.35, no.1, 1965, 145-147

TOPIC TAGS: ferromagnetic structure, domain structure, electron microscope, electron microscopy, domain

ABSTRACT: The use of the reflection electron microscope to measure domain wall thicknesses is discussed and measurements on the prismatic ferromagnetic material Fe<sub>3</sub>C are presented. The results show that the domain wall thickness is of the order of 100 Å. The present results are compared with the results of the last scattering electron microscopy in the region of the domain wall. The image was formed with a 100 kV electron microscope, the image being deflected past the aperture with the aid of deflector plates. The electrons passing through the aperture were ad-

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L 2692-65

ACCESSION NR: AP5003249

connected with a scintillator and the signal was displayed on an oscilloscope. When the temperature was heated to 2500°C the domain wall thickness increased; this is in agreement with the concepts, since the magnetic anisotropy decreases with heating. Orig. art. has: 1 formula and 5 figures.

ASSOCIATION: none

SUBMITTED: 12Feb64

NR REF SOW:005

ENCL: 00

SUB CODES: SS, EM

OTHER:003

Card2/2



ACC NR: APG015766

(A, N)

SOURCE CODE: UR/0048/66/030/005/0784/0786

AUTHOR: Ivanov, R. D.; Abalmazova, M. G.

ORG: none

TITLE: A universal high-resolution electron mirror microscope (UZEM-60) <sup>Report</sup>,  
Fifth All-Union Conference on Electron Microscopy held in Sverdlovsk 6-8 July 1965<sup>7</sup>

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 30, no. 5, 1966, 784-786 <sup>TH</sup>

TOPIC TAGS: electron microscope, electron optics, electron mirror, electron emission

ABSTRACT: A pilot model electron mirror microscope, constructed by modifying an EM-7 electron transmission microscope, is described very briefly. The instrument consists of an electron gun, a magnetic condensing lens with an iris and a magnetic stigmator, a fluorescent screen, an intermediate electromagnetic lens, and a five-electrode electrostatic objective similar to that of A. Septier (Compt. rend. Acad. sci., 235, 13 (1952)). The electrons, after passing in order through the above listed elements, are decelerated and reflected at the surface of the specimen and, after passing again through the objective and the intermediate lens, are brought to a focus on the fluorescent screen. The electrostatic objective has the form of a cone with a cutoff angle of 30°; this makes it possible to bombard the specimen with ions or illuminate it with ultraviolet light, thus considerably enhancing the versatility of the instru-

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ACC NR: AP6015766

ment. Particular attention was given to correction of astigmatism; there is a magnetic stigmator in the condensing lens and an electrostatic stigmator of the type described by O.Rang (Optik, 5, 518 (1949)) in the region of the objective lens. Accelerating voltages up to 60 kV are provided. Several photographs recorded with the instrument are presented. On one of these separate points can be distinguished that are separated by  $700 \text{ \AA}$ , but this does not represent the ultimate resolution of the microscope. The instrument can be operated not only as an electron mirror microscope, but also as a thermoelectron, photoelectron, or secondary electron emission microscope. Orig. art has: 4 figures.

SUB CODE: 20/

SUM DATE: 00/

ORIG REF: 003/

OTH REF: 003

Card 2/2

IVANOV, R.D.

Measuring the width of the domain boundary of ferromagnets with  
the aid of an electron-mirror microscope. Zhur. tekhn. fiz. 35  
no.1:145-147 Ja '65. (MIRA 18:3)

AUTHOR: Ivanov, R. F. SOV/30-59-2-10/60

TITLE: A Great Citizen of America (Velikiy grazhdanin Ameriki)  
On the 150<sup>th</sup> Anniversary of Abraham Lincoln's Birthday  
(K 150-letiyu so dnya rozhdeniya Avraama Linkol'na)

PERIODICAL: Vestnik Akademii nauk SSSR, 1959, Nr 2, pp 53-57 (USSR)

ABSTRACT: The author writes on Lincoln's life and work as a Member of Congress and President of the USA. He enjoyed the great sympathy of the American people and was hated and feared by the reactionary movement. He fought against slavery and abolished it. Many questions in connection with his life and work are dealt with in the papers by A. V. Yefimov, M. M. Mal'kin, A. I. Blinov, and T. P. Dement'yev (Ref 12). Lincoln is held in high esteem by the Soviet people as an outstanding representative of American democracy. There are 16 references, 9 of which are Soviet.

Card 1/1

OKOLOV, F.S.; NIKOLOV, S.Kh.; IVANOV, R.F.; KOPEYKIN, V.I.; PODDUBNAYA, V.A.  
(Krasnodar)

Effect of ultrasonic waves and the temperature on the colloidal characteristics of the blood serum in man. Biul. eksp. biol. i med. 55 no.2:53-55 F'63. (MIRA 16:6)

1. Iz kafedry obshchey gigiyeny (zav. - prof. F.S.(kolov) Kubanskogo meditsinskogo instituta.

(ULTRASONIC WAVES—PHYSIOLOGICAL EFFECT)

(HEAT—PHYSIOLOGICAL EFFECT)

(SERUM)

OKOLOV, F.S.; NIKOLOV, S.Kh.; IVANOV, R.F.; KOFEYKIN, V.I.;  
PODDUBNAYA, V.A.

Effect of ultrasonic waves on the colloidal properties of  
the human blood serum. Nauch. trudy Kub. gos. med. inst. 19:  
111-119 '62. (MIRA 17:8)

1. Iz kafedry obshchey gigiyeny (zaveduyushchiy - zasluzhennyy  
deyatel' nauki Kirgizskoy SSR prof. F.S. Okolov) Kubanskogo  
gosudarstvennogo meditsinskogo instituta.

IVANOV, R.G.

Activity of central plant laboratories and research teams in  
petroleum refining plants. Biul.tekh.ekon.inform.Gos.nauch.-issl.  
Inst.nauch. i tekh.inform. 17 no.10:83-84 10 '64. (MIRA 18:4)

Standartizatsiya nefti i produktov ee pererabotki (Standardization of petroleum and of the products of its conversion) Moskva, Standartgiz, 1947.

50 p.

At head of title: Russia. Vsesoyuznyy Komitet Standartov.



IVANOV, R.G., inzhener

We have to improve the quality of fuels used in high-speed diesel engines. Standartizatsiia no.6:46-49 N-D'54.

(MLRA 8:10)

1. Komitet standartov, mer i izmeritel'nykh priborov  
(Diesel fuels--Grading)

IVANOV, R.G.

Achievements in the production of catalysts in the petroleum refining industry and prospects of its development. Biul. tekhn.-ekon.inform.Gos.nauch.-issl.inst.nauch. i tekhn.inform. no.3:9-13 '63. (MIRA 16:4)

(Catalysts) (Petroleum—Refining)

IVANOV, R.G.

Achievements in the production of aromatic hydrocarbons and  
prospects of its development. Biul.tekh.-ekon.inform.Gos.nauch.-  
issl.inst.nauch.i tekh.inform. no.9:19-21 '63. (MIRA 16:10)

L 20982-65 EWT(m)/EPF(c)/T Fr-4 DJ/WE

ACCESSION NR: AP5003754

S/0065/64/000/009/0064/0070

AUTHOR: Ivanov, R. G.; Pozarov, A. M.

TITLE: All-Union conference on catalytic reforming and hydrogenation refining

SOURCE: Khimiya i tekhnologiya topliv i masel, no. 9, 1964, 69-70

TOPIC TAGS: hydrogenation, petroleum refining, petroleum engineering conference, catalytic reforming

ABSTRACT: In 1958-1963 alone, the production of motor vehicle gasoline has increased by 50%, diesel fuel by 100%, lubricants by 50%, and lubricant additives by 180%. Radical improvement of motor fuel quality is a most important national-economic problem of the current seven-year plan. An All-Union conference, held 30 June-3 July 1964 in the city of Novokuybyshevsk examined experience in catalytic reforming and hydropurification. Two hundred fifty persons participated in the conference. Yu. P. Sokov reported on losses in benzene during extraction from reforming catalysate; I. E. Gal'ins dealt with the problem of providing satisfactory catalysts for hydrogenation refining installations; G. I. Zavelev dealt with the problem of reactor shielding. V. M. Bazilevskiy reported on the use of platinum as a catalyst in catalytic reforming in the German Democratic Republic. Experience in operating

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ACCESSION NR: AP5003754

catalytic reforming installations for gasoline refining has shown that when using fuel boiling at up to 150-160° C and containing not less than 0.04-0.05% sulfur, gasoline can be obtained with an octane number of 73 using the motor method.

ASSOCIATION: none

SUBMITTED: 00

ENCL: 00

SUB CODE: FP

NO REF SDV: 000

OTHER: 000

JPRS

IVANOV, R.G.

Introducing new processes in the production of aromatic hydro-  
carbons. Khim. tekhn.-ekon. Inform. Gos. nauch.-issl. inst. nauch. tekhn.  
Inform. 12 no.5:54-55 My '65. (MIRA 18:6)

KORLAS, I.I., inzh.; IVANOV, R.I.

RM-24 radio relay apparatus. Avtom., telem.i sviaz'  
4 no.6:8-11 Je '60. (MIRA 13:7)

1. Otdel radiosvyazi Glavnogo upravleniya signalizatsii i svyazi Ministerstva putey soobshcheniya (for Korlas).
2. Nachal'nik radioreleynykh liniy Moskovskoy dorogi (for Ivanov).

(Railroads--Communication systems)

(Radio relay systems)

18(5)

PHASE I BOOK EXPLOITATION

SOV/2295

Moscow, Institut stali

Primeneniye kisloroda v staleplavil'nom proizvodstve (Use of Oxygen in Steelmaking) Moscow, Metallurgizdat, 1957. 118 p. (Series: Itsi, Sbornik, 37) Errata slip inserted. 3,500 copies printed.

Ed., Ye. A. Borovoi, Ed. of Publishing House; Ye. D. Rosentavitskiy, Tech. Ed.; Ye. B. Vaynshteyn, Editorial Board of the Institute; W. A. Glinkov, Doctor, Professor; R. M. Grigorash, Candidate of Technical Sciences, Doctor; N. T. Gudtsov, Academician; V. P. Yelutskiy, Doctor, Professor; A. A. Zhukovitskiy, Doctor, Professor; I. M. Kidin, (Asst. Ed.) Doctor, Professor; B. G. Livshits, Doctor, Professor; A. P. Lyubimov, Doctor, Professor; I. M. Pavlov, Corresponding Member, Academy of Sciences, USSR; K. O. Trubin, Doctor, Professor; and A. M. Fokhtvansov, Doctor, Professor

**PURPOSE:** This collection of articles is intended for scientists, industrial, chemical, and metallurgical engineers, physicists and students.

**COVERAGE:** This book is a collection of scientific research papers on the utilization of oxygen in steelmaking. The use of oxygen in blast for the intensification of steel combustion and the introduction of oxygen into liquid metal in order to oxidize admixtures are among the topics discussed. The use of oxygen in scrap-ore processes for making steel from pig iron with a high phosphorus content is also discussed. Several articles deal with the heating and processing fundamentals of steelmaking in a recirculation steel-making furnace. Individual blast and deal with the economics of steelmaking with oxygen blast and the optimum conditions for effective utilization of oxygen. No particularities are mentioned. References follow each article.

**Editor, V. V. (Candidate of Technical Sciences), R. M. Lyubov, and Ye. D. Yarinin (Engineer). See Content in the 98 Open-hearth Bath**

The authors discuss the content of oxygen, hydrogen, and nitrogen present in the open-hearth bath at various stages of the heat

**Banyaz, M. P. (Candidate of Economic Sciences), and V. A. Romasova (Candidate of Technical Sciences). Technical and Economic Efficiency of Oxygen Utilization in Open-hearth Processes 124**

**Oysa, O. M. Doctor of Technical Sciences, (Professor), Yu. V. Kravtsovskiy (Candidate of Technical Sciences), and V. V. Grigor'ev (Engineer). Intensifying Open-hearth Conversion of High-phosphorus Pig Iron by Introducing Oxygen into the Bath 138**

**Oysa, O. M., Yu. V. Kravtsovskiy, Ye. A. Kapustin, and V. P. Grigor'ev. Efficiency of Oxygen Utilization for Enriching Air in the Open-hearth Conversion of High-phosphorus Pig Iron 152**  
The author describes comparative industrial tests of different stages of the open-hearth process with and without the use of oxygen.

**Oysa, O. M. Selecting the Proper Method for Open-hearth Conversion of High-phosphorus Pig Iron 166**  
The author suggests a composition of open-hearth charge, which combined with oxygen blast, is supposedly more efficient in dephosphorization.

**Abrosimov, Ye. V. (Candidate of Technical Sciences, Doctor). Intensification of the Open-hearth Scrap Process with Oxygen 177**  
The author discusses the use of oxygen blast for the intensification of fuel combustion, the meltdown, for the direct oxidation of charge elements, and for the duration of the entire heat.

**Abrosimov, Ye. V., V. A. Kudrin (Candidate of Technical Sciences, Doctor), and G. I. Demin (Candidate of Technical Sciences, Doctor). Heat and Mass Balances of the Open-hearth Scrap Process with Oxygen Blast 195**  
The authors give an account of a comparative experimental investigation of heat and material balances of open-hearth processes with and without oxygen blast.

**Kudrin, V. A. Temporary Overoxidation of the Open-hearth Bath During Oxygen Blast 214**

**Abrosimov, Ye. V., and V. A. Kudrin. Course of Carbon Oxidation in the Open-hearth Bath During Oxygen Blast 232**

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Use of Oxygen in Steelmaking	307/2295
Kudrin, V.A., and Ye. V. Abrosimov. Possibility of Decreasing Time of the Rimming Process Proper in the Open-hearth Bath During Oxygen Blast	252
The author presents a method of decreasing rimming time to 4 to 5 minutes, thus increasing production by 5 to 10 percent	
Kryakovskiy, Yu. V. Dust Formation in the Open-hearth Furnace During the Scrap Process	260
Aleksandrova, A.I. [Candidate of Technical Sciences], O.M. Ozya, and M.P. Mamy. Making Steel From High-phosphorus Pig Iron	281
The authors discuss production data for the conversion of high-phosphorus pig iron, including heat time, slag formation, and the effect of oxygen on fuel consumption.	
Olinov, M.A. Doctor of Technical Sciences [Professor], and M.S. Vasilov [Candidate of Technical Sciences]. Heat Exchange Above the Bath of a Recirculation Steel-melting Furnace	305
This article deals with the thermal and technical aspects of a 10-ton industrial recirculation steel-melting furnace with simultaneous fuel injection. The authors discuss the application of oxygen-enriched air.	
Krivandin, V.A. [Candidate of Technical Sciences]. Study of Combustion in the Recirculation Steel-melting Furnace. The author describes an investigation of the combustion processes, furnace gases, and composition of the exhaust gases.	330
Rebman, A.Ya. [Candidate of Technical Sciences, Docent]. Special Characteristics of Gas Flow in a Recirculation Steel-melting Furnace	354
The author discusses investigations made in a model furnace for the study of gas flow, the distribution of combustion products, and the distribution of pressure on the walls.	
Demin, G.I. [Docent]. Heat Balances of a Recirculation Steel-melting Furnace	372
Polchanov, M.G. [Candidate of Technical Sciences, Docent]. Comparison of Gaseous Fuel Combustion Processes in Furnaces with Turbines and Recirculating Gas Flows	377
Livshits, B.G. [Doctor of Technical Sciences, Professor], L.A. Shilnikov [Candidate of Technical Sciences, Docent], and V.G. Zakharenko [Engineer]. Quality of Steel Made in a Recirculation Steel-melting Furnace	395
The authors investigate the qualities of recirculation-furnace steels, comparing them with ordinary open-hearth steel.	

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*Ivanov R.M.*

ORIOV, V.I., kand. tekhn. nauk; IVANOV, R.M., inzh.; YERININ, Kh.D., inzh.

Gas content in open-hearth furnace baths. Sbor. Inst. stali  
no.37:98-123 '57. (MIRA 11:3)

1. Kafedra metallurgii stali Moskovskogo instituta stali im. I.V.  
Stalina.

(Open-hearth furnaces)  
(Gases in metals)

IVANOV, R.M., inzh.; ABROSI'OV, Ya.V., dots., kand.tekhn.nauk

Decarbonization reaction during the oxygen impingement process.

Izv. vys. ucheb. zav.; chern. met. no.7:17-27 J1 '58.

(MIRA 11:10)

1. Moskovskiy institut stali.

(Open-hearth process) (Oxygen--Industrial applications)

IVANOV, R.M. inzh.; ABROSIMOV, Ye.V., dots., kand.tekhn.nauk

Slag conditions during open-hearth smelting with various methods of  
gaseous oxygen blow. Izv.vys.uchob.zav.; chern.mot. no.11:9-21 N '58.  
(MIRA 12:1)

1. Moskovskiy institut stali.  
(Open-hearth process)  
(Oxygen--Industrial applications)

IVANOV, R. M.: Master Tech Sci (diss) -- "Some problems of intensifying the scrap-ore open-hearth process with oxygen". Moscow, 1959. 18 pp (Min Higher Educ USSR, Moscow Order of Labor Red Banner Inst of Steel im I. V. Stalin), 120 copies (KL, No 11, 1959, 119)

VONOV, R. M.

PHASE I BOOK EXPLOITATION

80V/5556

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Moscow. Institut stali.

Novoye v teorii i praktike proizvodstva martenovskoy stali (New [Developments] in the Theory and Practice of Open-Hearth Steelmaking) Moscow, Metallurgizdat, 1961. 439 p. (Series: Trudy Mezhvuzovskogo nauchnogo soveshchaniya) 2,150 copies printed.

Sponsoring Agency: Ministerstvo vysshego i srednego spetsial'nogo obrazovaniya RSFSR. Moskovskiy institut stali imeni I. V. Stalina.

Eds.: M. A. Glinkov, Professor, Doctor of Technical Sciences, V. V. Kondakov, Professor, Doctor of Technical Sciences, V. A. Kudrin, Docent, Candidate of Technical Sciences, G. N. Oyko, Professor, Doctor of Technical Sciences, and V. I. Yavovskiy, Professor, Doctor of Technical Sciences; Ed.: Ye. A. Borko; Ed. of Publishing House: N. D. Gromov; Tech. Ed.: A. I. Karasev.

PURPOSE: This collection of articles is intended for members of scientific institutions, faculty members of schools of higher education, engineers concerned with metallurgical processes and physical chemistry, and students specializing in these fields.

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New [Developments] in the Theory (Cont.)

SOV/5556

COVERAGE: The collection contains papers reviewing the development of open-hearth steelmaking theory and practice. The papers, written by staff members of schools of higher education, scientific research institutes, and main laboratories of metallurgical plants, were presented and discussed at the Scientific Conference of Schools of Higher Education. The following topics are considered: the kinetics and mechanism of carbon oxidation; the process of slag formation in open-hearth furnaces using in the charge either ore-lime briquets or composite flux (the product of calcining the mixture of lime with bauxite); the behavior of hydrogen in the open-hearth bath; metal desulfurization processes; the control of the open-hearth thermal melting regime and its automation; heat-engineering problems in large-capacity furnaces; aerodynamic properties of fuel gases and their flow in the furnace combustion chamber; and the improvement of high-alloy steel quality through the utilization of vacuum and natural gases. The following persons took part in the discussion of the papers at the Conference: S.I. Filippov, V.A. Kudrin, M.A. Olinkov, B.P. Nam, V.I. Yavovskiy, G.M. Oyku and Ye. V. Chelishchev (Moscow Steel Institute); Ye. A. Kazachkov and A. S. Kharitonov (Zhdanov Metallurgical Institute); N.S. Mikhaylets (Institute of Chemical Metallurgy of the Siberian Branch of the Academy of Sciences USSR); A.I. Stroganov and D. Ya. Povolotskiy (Chelyabinsk Polytechnic Institute); P.V. Umrikhin (Ural Polytechnic Institute); I.I. Fomin (the Moscow "Izerny molot" Metallurgical Plant); V.A. Fuklev (Central Asian Polytechnic Institute).

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New [Developments] in the Theory (Cont.)

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and M.I. Beylinov (Night School of the Dneprodzerzhinsk Metallurgical Institute).  
References follow some of the articles. There are 268 references, mostly Soviet.

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Yavovskiy, V. I. [Moskovskiy institut stali - Moscow Steel Institute].  
Principal Trends in the Development of Scientific Research in Steel  
Manufacturing

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Filippov, S. I. [Professor, Doctor of Technical Sciences, Moscow Steel  
Institute]. Regularity Patterns of the Kinetics of Carbon Oxidation  
in Metals With Low Carbon Content

15

[V. I. Antonenko participated in the experiments]

Levin, S. L. [Professor, Doctor of Technical Sciences, Dnepropetrovskiy  
metallurgicheskiy institut - Dnepropetrovsk Metallurgical Institute].

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New [Developments] in the Theory (Cont.)

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Kapustin, Ye. A. [Docent, Candidate of Technical Sciences, Zhdanov Metallurgical Institute]. Aerodynamic Properties of Fuel Gases and Their Flow in the Combustion Chamber of an Open-Hearth Furnace

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Kudrin, V.A. [Docent, Candidate of Technical Sciences], G.N. Oyko, O.D. Petrenko, A.A. Yudson, Yu. M. Nechkin, B.P. Nam, [Engineers], I.I. Ansheles [Docent, Candidate of Technical Sciences], R.M. Ivanov [Candidate of Technical Sciences], and V.P. Adrianova [Engineer]. Special Features of Making High-Quality Steel in Natural-Gas-Fired Open-Hearth Furnaces

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Butakov, D.K. [Docent], L.M. Mal'nikov [Engineer], A.M. Lirman, V.D. Budenny, P.P. Babich, and A.I. Sinkovich [Ural Polytechnic Institute, Zavod im. Ordzhonikidze Chelyabinskogo sovnarkhoza - Plant imeni Ordzhonikidze of the Chelyabinsk Sovnarkhoz]. Special Features of Making Steel in Open-Hearth Furnaces With Magnesite-Chromite [Brick] Roofs

290

Kudrin, V.A., Yu. M. Nechkin, Ye. I. Tyurin [Candidate of Technical Sciences], and Ye. V. Abrosimov [Moscow Steel Institute]. The Acid Open-Hearth Process

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New [Developments] in the Theory (Cont.)

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Perchatkin, P.M. [Engineer], A.A. Bezdenezhnykh [Docent, Candidate of Technical Sciences], A.M. Bigeyev [Docent, Candidate of Technical Sciences], and V.N. Letimin [Engineer], [Magnitogorsk Mining and Metallurgical Institute]. Effect of Furnace Atmosphere on the Behavior of Sulfur During Melting in the High-Capacity Open-Hearth Furnace

361

Ivancov, R.M. [Candidate of Technical Sciences], Ye. V. Abrosimov [Moscow Steel Institute]. Temperature Regime of the Oxygen-Blown Open-Hearth Bath

371

Samarin, A.M. [Corresponding Member of the Academy of Sciences USSR], and A.P. Potrusayev [Engineer], [Moscow Steel Institute]. Change in Metal Composition Caused by Oxygen Blowing

379

Fiklev, V.A. [Docent, Candidate of Technical Sciences, Sredneaziatzskiy politekhnicheskii institut - Central Asia Polytechnic Institute]. Desiliconizing Pig Iron by Oxygen in a Special Spout While Pouring Iron Into the Open-Hearth Furnace

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TAKHTAYEV, Yu.B.; IVANOV, R.M.; LEONOV, A.F.; VARNAVSKIY, I.N.;  
IZOTOV, N.I.; MUSIKHINA, M.K.

Improved technology for the making of native alloy steel  
at the Orsk-Khalilovo Metallurgical Combine. [Sbor. trud.]  
Nauch.-issl.inst.met. no.4:82-90 '61. (MIRA 15:11)

1. Nauchno-issledovatel'skiy institut metallurgii (for  
Takhtayev, Ivanov). 2. Orsko-Khalilovskiy metallurgicheskii  
kombinat (for Leonov, Varnavskiy, Izotov, Musikhina).  
(Khalilovo---Steel---Metallurgy)

TAKHTAYEV, Yu.B.; IVANOV, R.M.; LEONOV, A.F.; VARNAVSKIY, I.N.;  
IZOTOV, N.I.; MUSIKHINA, M.K.

Improved technology for the making of native alloy  
steel at the Orsk-Khalilovo Metallurgical Combine.  
[Sbor. trud.] Nauch.-issl.inst.met. no.4:82-90 '61.

(MIRA 15:11)

1. Nauchno-issledovatel'skiy institut metallurgii (for  
Takhtayev, Ivanov). 2. Orsko-Khalilovskiy metallurgicheskiy  
kombinat (for Leonov, Varnavskiy, Izotov, Musikhina).  
(Khalilovo—Steel—Metallurgy)

LEONOV, A.F.; MOROZOV, A.N.; IVANOV, R.M.; VARNAVSKIY, I.N.;  
TAKHTAYEV, Yu.B.; IZOTOV, N.P.; VOLKOV, S.S.

Smelting of native-alloy steel. Metallurg 6 no.10:20-21  
O '61. (MIRA 14:9)

1. Orsko-Khalilovskiy metallurgicheskiy kombinat i  
Chelyabinskiy nauchno-issledovatel'skiy institut metallurgi.  
(Steel alloys--Metallurgy)

3/133/61/000/006/004/017  
A054/A129

AUTHOR: Ivanov, R. M.

TITLE: News in brief

PERIODICAL: Stal', no. 6, 1961, 518

TEXT: The Chelyabinskiy nauchno-issledovatel'skiy institut metallurgii (Chelyabinsk Scientific Research Institute of Metallurgy) in cooperation with the OKhMK has developed a method of converting converter semi-products with a 0.45 - 0.65% P and 0.20 - 0.40% C content (not containing Si and Mn) in open-hearth furnaces to 10XCHΔ (10KhSND), 15XCHΔ (15KhSND), 14FH (14GN) and other steels. The application of the duplex method for natural-alloyed pig-iron showed that addition of about 1.5% cinder to the slag during smelting improved the dephosphorization of the metal. The metal was deoxidized in the furnace only with 5 kg/t ferromanganese and in the ladle with silicomanganese, ferrosilicon, ferrotitanium and aluminum. The phosphorus content of the finished metal decreased by 0.003-0.006 %, the deoxidizing period was 4-5 minutes shorter and the cost of steel 34 kopek/ton lower. The application of very strict parameters for the smelting process improved the surface of 2.7 - 3.0 ton strip ingots. ✓

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News in brief

S/133/61/000/006/004/017  
A054/A129

This new technology makes it possible to melt 20XГHP (20KhGNR) steels (with a 0.91 - 0.92% Ni content) based on natural-alloyed pig-iron without adding nickel or nickel-compounds, and to roll 6.2-ton ingots of this steel into sections with diameters of up to 150 mm. ✓

Card 2/2

IVANOV, R.N.; KAMINSKIY, S.T.

Role of Stokes' current in Leningrad floods. Izv. AN SSSR. Fiz.  
atm. i okeana 1 no.11:1196-1204 N '65.

(MIRA 18:12)

1. Morskoy gidrofizicheskiy institut AN SSSR, Chernomorskoye  
otdeleniye. Submitted April 16, 1965.



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18.7530 1145

S/120/61/000/001/061/062  
EO32/E114

AUTHORS: Kukavadze, G.M., Ivanov, R.N., and Zhuravleva, V.G.

TITLE: Production of Films of High Melting Point Materials  
in Vacuum

PERIODICAL: Pribery i tekhnika eksperimenta, 1961,<sup>6</sup>No.1, p 195

TEXT: One of the methods of producing thin films of high melting point materials is by condensing the vapours of these materials, produced by electron bombardment of solid specimens in vacuum. The present authors have used one of the possible versions of this method to obtain pure deposits of cobalt, iridium and rhodium. The principle of the method is illustrated in Fig.1. The metal to be evaporated 1, which is in the form of a rod in the case of cobalt, a wire in the case of iridium and a strip in the case of rhodium, is inserted into the ceramic holder 3 and is heated by the tungsten spiral 2. A voltage of +2.5-3 kV is applied to the specimen 1 through the lead 4. The spiral is earthed and carries a current of 4 to 4.5 A. The spiral consists of 2.5 turns and is made of a wire 0.2 mm in diameter. The emission current from the spiral is 15-20 mA and the electrons from Card 1/3

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S/120/61/000/001/061/062

E032/E114

Production of Films of High Melting Point Materials in Vacuum  
the spiral bombard the metal, raising it to a high temperature.  
In the case of cobalt, a drop of the metal is kept by surface  
tension forces at the end of the ceramic tube. The cobalt does  
not interact with the ceramic and the evaporation occurs from the  
surface of the drop. In the case of evaporation of Iridium and  
rhodium the end of the wire or strip melts, and the resulting  
liquid drop serves as the source of vapour. The method has been  
used to produce pure cobalt films 0.15-0.4 $\mu$  thick, having well-  
defined magnetic properties when deposited on glass slides  
140 x 110 x 30 mm<sup>3</sup>. Iridium and rhodium deposits about 0.1 $\mu$  thick  
have also been obtained on mass-spectrometer ion-source elements.  
There are 1 figure and 3 Soviet references.

ASSOCIATION: Institut teoreticheskoy i eksperimental'noy fiziki  
AN SSSR

Card 2/3 (Institute of Theoretical and Experimental Physics,  
AS USSR)

SUBMITTED: December 29, 1959

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Production of Films of High ...

S/120/61/000/001/061/062  
EO32/E114

Fig.1

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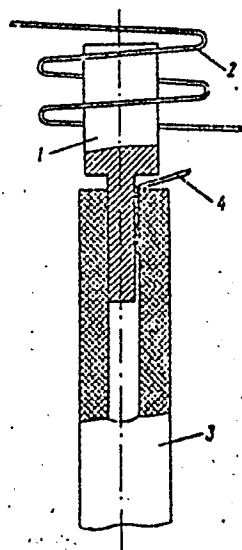


Fig.1 on page 108  
subscribed 1.10.1971

*Ivanov, R. N.*

INSTRUMENTATION: SPECTROMETERS

"Double-Filament Ion Source With Surface Ionization for Mass Spectrometers", by R.N. Ivanov and G.M. Kukavadze, Pribory i Tekhnika Eksperimenta, No 1, January-February 1957, pp 106-110.

Description of an ion source for a mass spectrometer. The source is intended for the analysis of substances in the solid state and is based on the phenomenon of surface ionization. Unlike the widely-used thermionic sources, in which one evaporates from a single emitter simultaneously both neutral atoms and the positive ions resulting from the surface ionization, the atoms are evaporated in this source from a single filament, and the ionization takes place on a second filament. Such a separation of the evaporation processes and from the surface ionization makes it possible to increase considerably the effectiveness of the ionization in the ion source.

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